

Private Banking Exam Sample Questions

Bachelor Finance & Insurance
Winter Term 2010/2011

The sample exam encompasses four pages including this cover sheet. For the following five questions you would have 90 minutes. You may receive up to 90 points, i.e. on average you should spend about 1 minute per point. The level of difficulty displayed in the sample questions is not necessarily representative for upcoming exams, i.e. questions can be easier or more difficult and cover different topics. **There are no solutions available!** Further we won't discuss your individual solutions.

Please note:

- You may only use a pocket calculator that has no option to put text in the memory.
- You may answer all questions either in German or in English. Within one of the five main questions, you should not switch languages.
- Calculate with four digits after the decimal point.
- Please write in a legible way!

Good luck!

1 Portfolio Theory

20 points

- You have two assets A and B and information about $r_A, r_B, \sigma_A^2, \sigma_B^2, \sigma_{AB}$.
How do you derive the Minimum Variance Portfolio (MVP)? Name and explain the steps and *all* variables that you might use!
Write down the expected return of the MVP!
(Note: You do not have to show the complete mathematical derivation but at least indicate the mathematical starting points and clearly describe the steps.) (5 points)
- Briefly define the market portfolio! Can the MVP be the market portfolio? Explain your answer! (5 points)
- Briefly explain the three basic assumptions underlying the CAPM! (5 points)
- What does the asset beta measure? Can beta be negative? Explain what this means! Please give an example of a stock that has a positive beta and explain why you think so! (5 points)

2 Institutional Background

10 points

Define “universal banking system” and “separated banking system”! Name and explain two advantages of each system! (10 points)

3 Diversification and Performance Measures 25 points

Assume the index IFFAX is formed by the three stocks A, B and C. The respective weight of one share is calculated with regard to its relative market capitalization. Unlike the DAX calculation, there is no upper limit for the weights. Apart from that, the index is calculated according to the same rules that apply to the DAX. The base date of the index is $t = 0$. The base value for this time is 1000 points. At the last chaining date in $t = 3$ a chaining value of $K_3 = 1,8$ has been calculated. Since then, neither dividend payments nor price-relevant capital adjustments have taken place.

- Please calculate the index value at the end of $t = 4$ using the table stated below. (5 Points)
- In period $t = 5$, Company A increases its capital out of company reserves with a subscription ratio of 2:1. Assume that the new shares are fully entitled to dividends. Company B pays its stock holders a dividend of \$ 2.50 in $t = 5$. Calculate the index value at the end of $t = 5$. (10 Points)
- The next chaining date is due at the end of $t = 6$. Shortly before, company C announces its filing for insolvency. The regulation of IFFAX determines the exclusion of a company in such a situation. Assume that there is no other company to follow C into the index and

there haven't been any dividend payments or capital adjustments since $t = 5$. Calculate the new chaining value K_6 . (10 Points)

	A	B	C
Closing price before index inclusion $t = 0$	18.50€	55.00€	30.00€
Number of shares before index inclusion $t = 0$	500,000	1,500,000	1,200,000
Number of shares $t = 3$	500,000	1,500,000	1,200,000
Number of free float shares $t = 3$	450,000	1,425,000	960,000
Number of shares $t=6$	750,000	1,500,000	0
Number of free float shares $t = 6$	675,000	1,425,000	0
Closing price $t = 4$	20.00€	54.00€	35.00€
Closing price in $t = 5$	15.00€	58.00€	35.00€
Closing price in $t = 6$	20.00€	60.00€	2.00€

The following formulas are given:

$$Index_t = K_T \cdot \frac{\sum_{i=1}^{30} (p_{it} \cdot ff_{iT} \cdot q_{iT} \cdot c_{it})}{\sum_{i=1}^{30} (p_{i0} \cdot q_{i0})} \cdot 1000$$

$$Index_t = \frac{\sum_{i=1}^{30} p_{it} \cdot F_i}{A} \cdot 1000$$

with the base value A

$$A = \frac{\sum_{i=1}^{30} p_{i0} \cdot q_{i0} \cdot 100}{\sum_{i=1}^{30} q_{i0}}$$

and F_i factors

$$F_i = K_T \cdot \frac{ff_{iT} \cdot q_{iT}}{\sum_{i=1}^{30} q_{i0}} \cdot 100 \cdot c_{it}$$

4 Options and Certificates

20 points

- a) Write down the Put-Call-Parity and label the components clearly! How does it change if dividends are paid? (3 points)
- b) Is there arbitrage possible given the following information?
- $C(t) = 25.23$
 - $P(t) = 11.96$
 - $K = 75.74$
 - $S(t) = 70.17$
 - $r = 1.1$
 - $T-t = 3$ years

Why is it difficult to realize arbitrage gains in reality? (4 points)

- c) What is a discount certificate? Explain its basic structure! When is an investment in a discount certificate most appropriate and why? (8 points)
- d) How is the discount financed by the issuer? What increases the discount and why? (5 points)

5 Behavioral Finance

15 points

What is the Equity Premium Puzzle? Explain the possible solution to this puzzle that Benartzi & Thaler (1995) offer in their paper "Myopic Loss Aversion and the Equity Premium Puzzle"! (15 points)